



CONCEPTUAL PROPOSAL

Amelia and Dinwiddie County Broadband Project

RFP

19-050719

RiverStreet Networks: Executive Team (Jody Call, Joshua Strickland)
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1 INTRODUCTION

1.1 EXECUTIVE SUMMARY OF OUR PROPOSAL

A joint venture of several subsidiaries of Wilkes Telephone Membership Corporation (WTMC) propose to combine their efforts to bring reliable broadband service to underserved and unserved areas of Amelia and Dinwiddie Counties. This joint venture will be led by one of WTMC's Virginia subsidiaries, RiverStreet Communications of Virginia, Inc. (RSCVA), which is a competitive local exchange company (CLEC) licensed to provide telecommunications services and authorized to do business in the Commonwealth of Virginia. Other WTMC subsidiary and affiliated entities to be involved in this joint venture include another Virginia broadband service provider, Gamewood Technology Group, Inc. (GTG), and its Virginia CLEC subsidiary Gamewood Telecom, Inc., as well as North Carolina Wireless, LLC (NCW), which is in the process of being acquired by RiverStreet Management Services, LLC (RiverStreet). RiverStreet is a wholly-owned WTMC subsidiary and holding company, which owns a family of actively and professionally managed communications enterprises. These entities do business under the name RiverStreet Networks, including RSCVA and GTG, committed to providing high quality advanced services to customers in rural markets where deployment and maintenance of telecommunications networks and services is challenging.

RiverStreet Networks and NCW began partnering in 2018 to combine Fiber-to-the-Home and Fixed Wireless technologies to reach underserved and unserved areas of North Carolina and Virginia. This relationship resulted in RiverStreet's agreement to acquire NC Wireless in 2019. NCW will play an integral role in fulfilling the requirements of this RFP if this consortium is awarded the project.

WTMC is a North Carolina non-profit, cooperative corporation organized under Chapter 117 of the North Carolina General Statutes. WTMC is a cooperative incumbent LEC and it has provided telecommunications services in four rural exchanges located in and around Wilkes County, North Carolina since 1951. WTMC's CLEC subsidiary Wilkes Communications, Inc. (WCI), began offering competitive communications and broadband services in areas around WTMC's service areas in 2006.

WTMC and WCI recently enhanced their respective networks in order to be able to provide Wilkes County customers with an all active, Fiber-to-the Home network. RiverStreet Networks is committed to continuing the trend of providing access to High Speed Internet in Rural America by branching out to underserved and unserved areas. Even with the telecommunications industry undergoing tremendous changes, RiverStreet Networks is dedicated to providing customers with the latest in technological advancements and services available today. Supported by WTMC's decades of experience, RiverStreet Networks enjoys a reputation as an industry leader and is ready to bring the same winning formula of excellent customer service, combined with a state-of-the-art suite of services, to Dinwiddie and Amelia Counties.

As a wholly-owned subsidiary of Wilkes Telephone Membership Corporation, RiverStreet Networks began as an extension of Wilkes Communications in Wilkes County, NC. After more than 61 years of providing telecommunications services and recently enhancing Wilkes County with an all active, Fiber-to-the Home network, Wilkes Communications is committed to continuing the trend of providing access to High Speed Internet in Rural America by branching out to underserved and unserved areas. Even with the telecommunications industry undergoing tremendous changes, RiverStreet Networks is dedicated to providing customers with the latest in technological advancements and services available today. With decades of experience, RiverStreet stands behind its reputation as an industry leader and is ready to bring the same winning formula of excellent customer service, combined with a state-of-the-art suite of services, to Dinwiddie and Amelia Counties.

NCW began operating as a privately held Internet and telecommunications service provider based in Hickory, North Carolina in 2003. NCW has worked closely over the years with the North Carolina Department of Commerce, various counties, and other organizations to explore ways to expand broadband services into underserved and unserved parts of North Carolina through a sustainable business model. Presently, NCW operates a Fixed Wireless Network providing Internet service throughout eight rural North Carolina counties. Notably, in 2016 with the support of the Person County Government and a grant selection process, NCW began a wireless broadband deployment project in Person County. At this point, two of four new tower sites are complete and a third will be completed in 2019. NCW's core product offering is Unlimited Use Internet Access; however, NCW also provides telephone / fax services as well as customized business packages for Enterprise Internet, Data, and Telecom Consolidation. NCW will secure any additional licensing or permitting that may be required in order for it to participate in this joint venture.

RiverStreet Networks' aim is to utilize current and future infrastructure funding mechanisms for deployment of next-generation broadband networks in unserved and underserved rural areas of Virginia and North Carolina. RiverStreet Networks has extensive, proven experience in fixed wireless deployments as it is serving more than 2,000 residential and business subscribers in the following counties in Virginia and North Carolina: Virginia – Pittsylvania and King and Queen; North Carolina – Person, Avery, Catawba, Montgomery, Richmond, Moore, Beaufort, and Hyde.

The technology to be used by the RiverStreet joint venture for the Dinwiddie and Amelia project will include a hybrid of fiber optic and fixed wireless technologies. The RiverStreet joint venture commits to matching the \$3.4 million in funds to be provided by Dinwiddie and Amelia Counties with \$1 million of its own capital to complement fixed wireless with fiber optic infrastructure for current and, more importantly, future broadband needs. The inclusion of fiber optic provides superior data rates when combined with fixed wireless because it allows 10 Gbps and higher rates at the tower or access point locations, which mitigates network congestion and eliminates the need to use wireless for backhaul to the Internet.

RiverStreet has continued to grow through a number of acquisitions and mergers. In 2014, three small, for-profit ILECs, including Saluda Mountain Telephone, Service Telephone, and

Barnardsville Telephone, were acquired from TDS Telecom. In 2018, RiverStreet acquired Peoples Mutual Telephone Company, the ILEC serving in Gretna, VA. Later in 2018, RiverStreet acquired Ellerbe Telephone Company, the ILEC serving Ellerbe, NC, as well as GTG, which is based in Danville, VA. RiverStreet has since acquired Red's TV and Cable, Inc., based in Bath, NC and, as noted above, RiverStreet is in the process of acquiring NCW. In addition, in August, 2018 WTMC merged with one of the other eight independent telephone cooperatives in North Carolina, Tri-County Telephone Membership Corporation, with WTMC being the surviving entity. Through that merger, WTMC acquired Tri-County Communicators, d/b/a Tri-County Broadband, in rural Eastern North Carolina, another transaction reflecting the RiverStreet family's ability to adapt to the ongoing changes in our industry.

Moving to one brand, Wilkes Telephone Membership Corporation | Wilkes Communications, Barnardsville Telephone Company, Service Telephone Company, Saluda Mountain Telephone Company, Ellerbe Telephone Company, Tri-County Telephone Membership Corporation | Tri-County Broadband, Peoples Mutual Telephone Company, Gamewood Technology Group, Red's TV and Cable, and NC Wireless all are combining into the RiverStreet Networks model. The overall mission is "To provide excellence in customer service while adding value to the customer and serving the unserved." The RiverStreet joint venture is well qualified to deliver reliable, affordable broadband service to Dinwiddie and Amelia Counties.

RiverStreet Networks has been providing Fiber-to-the-Home services since 2005 via an exclusively Active fiber network in its core market in and around Wilkes County, NC. During the acquisition of three former TDS ILEC properties, the company also dedicated itself to overbuilding these companies' antiquated copper-based networks to provide 1 Gbps services to each respective community. These networks are in the process of being migrated to fiber with Saluda Mountain occurring 2017-2019, Barnardsville in 2018-2020, and Service in 2019-2021. Concurrently, RiverStreet has been constructing a greenfield Fiber-to-the-Home network in Stokes County, NC, with hopes of passing at least 5,000 customers in 2019. All of these projects, including the original overbuild in Wilkes County, were predicated upon the recognized need to provide access to high-speed Internet services in rural areas.

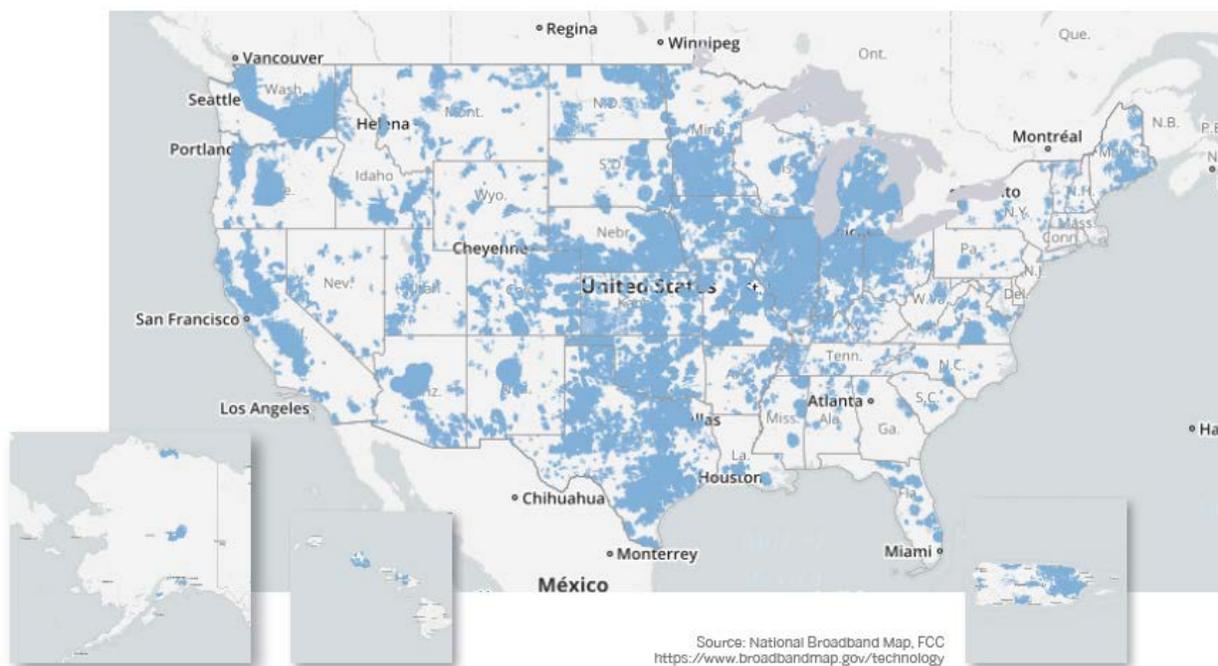
In late-2018 and early-2019, RSCVA was awarded \$32 million in CAF Phase II (Connect America Funding) for 77 high-cost census block groups, with 13,518 locations, throughout the following Virginia counties: Bedford, Campbell, Pittsylvania, Halifax, Mecklenburg, Lunenburg, Charlotte, Brunswick, and King and Queen. This award and the networks which RSCVA will deploy with the CAF II funding and capital provided by WTMC will place RiverStreet Network's footprint adjacent to Dinwiddie and Amelia Counties and facilitates the strategic goal of expanding broadband services to rural Virginia. The timeline for the CAF II network build begins in 2019 and will take six years to complete.

When the FCC's RDOF (Rural Digital Opportunity Fund) is made available in 2022, RiverStreet will engage in the process to obtain additional funding in additional rural locations in Virginia, which was not available during the recent CAFII Auction. This process further aligns with RiverStreet

Networks' mission of providing broadband service to the underserved and unserved areas of Virginia and North Carolina.

Most recently, RiverStreet Networks entered into a business partnership with the North Carolina Electric Membership Corporation (NCEMC) to be the preferred provider of broadband across its members' statewide footprint. This partnership has the possibility of providing broadband to over half of the NCEMC's 1.2 million customers. RiverStreet will deploy a hybrid of fiber optic and fixed wireless infrastructure, just as it proposes for Dinwiddie and Amelia Counties in this response, to provide broadband to the NCEMC members' rural footprint.

FIGURE 1: U.S. Fixed Wireless Broadband Availability



1.2 HOW BROADBAND WIRELESS ACCESS WORKS?

In a typical BWA network, broadband content is received by the BWA provider from an external distribution point via fiber or microwave connections. From there, signals are delivered to BWA customers via wireless transmitters on towers. The towers are interconnected by licensed or unlicensed spectrum and can carry up to 5 to 10 Gbps of capacity. Customers receive the signals via antennas that are attached to the subscribers' premises. Therefore, the technology is called fixed wireless, as opposed to mobile/cellular wireless. Within the subscribers' premises, the signal is most commonly delivered via a Wi-Fi router or Ethernet cable to personal computers, TV monitors, and other stationary and mobile devices in the home or business.

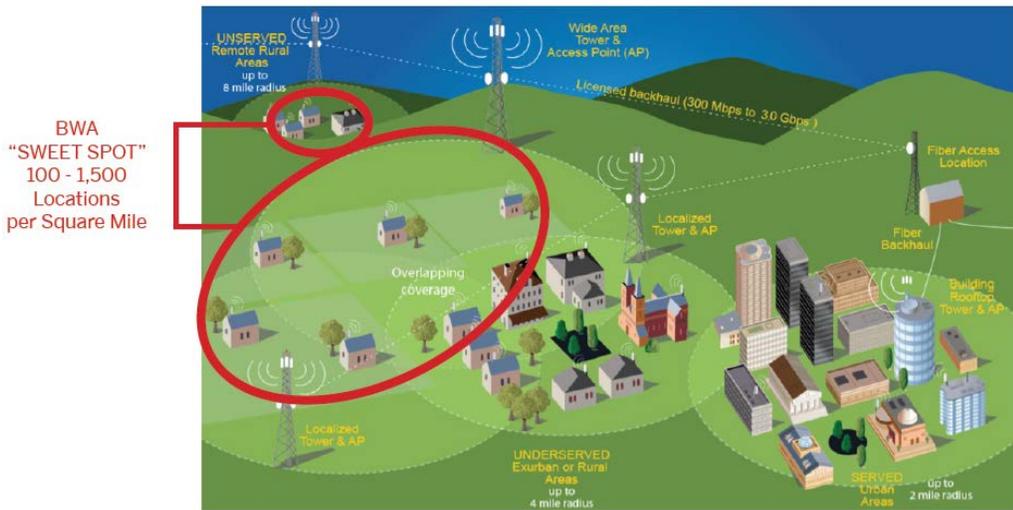
BWA providers typically employ a variety of licensed and unlicensed spectrum to deliver their services. For last-mile, point-to multipoint connections, unlicensed spectrum bands such as 900 MHz and 2.4 GHz were commonly used in the early years of the industry.

However, these bands have given way to 5 GHz, 3.65 GHz, and 2.5 GHz to accommodate increasing speed, coverage, and capacity needs. Unlicensed 5 GHz and licensed 6-24 GHz point-to-point connections are most commonly used to connect towers and serve high-volume enterprise customers, with FCC microwave licenses readily available at nominal cost.

Equipment designed for use in unlicensed spectrum bands is limited in power output to reduce

interference to other users, as mandated by the FCC, and is designed to perform well in environments with more potential for interference than equipment designed for use in exclusively licensed bands.

FIGURE 2: Typical BWA Network Architecture



The BWA “sweet spot”, where providers can offer the best service and economics, is often in exurban areas with 100 to 1,500 locations per square mile, such as those shown on the left side of Figure 2.

Source: *The Caramel Group 2017 BWA Industry Study*

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3 QUALIFICATIONS AND EXPERIENCE

3.1 POINT OF CONTACT

Jody Call (jodycall@myriverstreet.net), Bill Shillito (billshillito@myriverstreet.net), and Joshua Strickland (joshstrickland@myriverstreet.net)

North Carolina Wireless, LLC is a Wholly Owned Subsidiary of Wilkes TMC

3.2 ORGANIZATION AND LEGAL STRUCTURE

Wilkes TMC and its Wholly Owned Subsidiaries

(Legal Structure and Ownership Diagram see Attachments)

3.3 EXPERIENCE

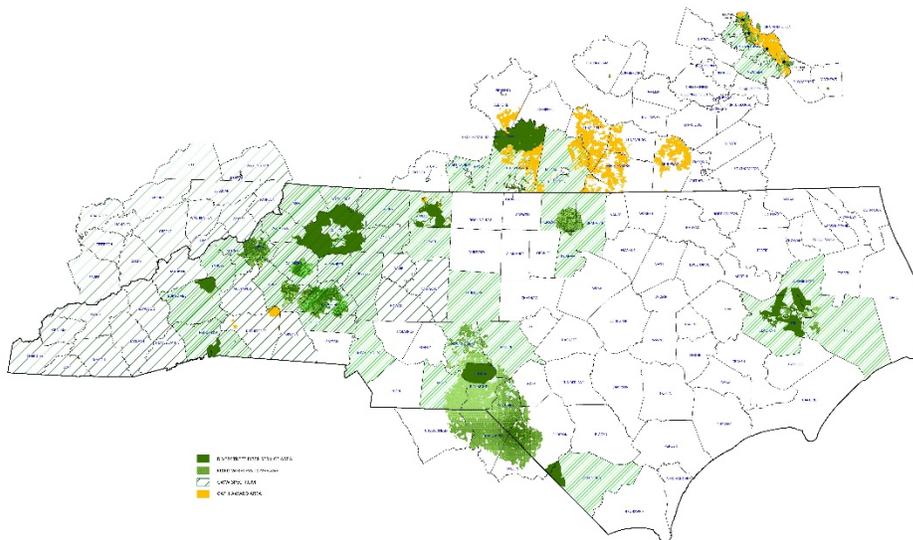
3.3.1 Key Team Members

Eric Cramer, Jody Call, Greg Coltrain, Kimberley Johnson, Amanda Perry, Jody Souther, Bill Shillito, and Joshua Strickland *(further details included in the attachments section)*

3.3.2 Wireless PtP and PtMP Network Experience

- **Hickory Area Network** - Established in Summer 2003 and in continued operation after multiple expansions and network-wide upgrades operating from 13 POP sites. This provides services to customers across 5 Counties based out of the Greater Hickory Area.
 - Technologies Used
 - Fixed Wireless PtMP, Fixed Wireless PtP, Hybrid Networks
 - Urban Services
 - We have provided various business-class services across a 5-county area to include PtMP Internet, PtP Services, Dedicated PtP Internet, Server Co-Location, Phone Services (VoIP and Copper Resale), Fax Services (IP based and Copper Resale), and Telecom Account Management.
 - Rural Services
 - We have provided various residential services across a 5-county area to include PtMP Internet, Phone Services (VoIP), and Fax Services (IP based).
 - PPP – We have a number of PPP projects in this area
 - City of Conover – Water Tank Access and Downtown Wi-Fi
 - City of Claremont – Water Tank Access to deploy into adjacent business parks
 - Catawba County – Communications tower access to extend last-mile services to homes and businesses in Rural SE Catawba County
- **Avery County Network** – A PPP Established in Summer 2013 and in continued operation after multiple expansions, operating from 8 pop (tower) sites.
 - Technologies Used - Fixed Wireless PtMP and PtP Licensed and Unlicensed

- o Rural Services
 - We have provided various residential services across a multi-county area to include PtMP Internet, Phone Services (VoIP), and Fax Services (IP based).
- **Person County Network**– A PPP Established in Fall 2017 and current construction with 2 of 4 primary towers lit with #3 occurring in 2019. This network was result of a matching grant for capital expenses provided by the County of Person.
 - o Technologies Used
 - Fixed Wireless PtMP with LTE, PtP Licensed and Unlicensed
 - o Rural Services
 - The vast majority of this network would be considered rural.



Confidential

NC / VA Service Footprint *(full size located in attachments section)*

3.4 SUBCONTRACTORS

RiverStreet Networks utilizes subcontractors for fiber construction and splicing. Those contractors include:

- Appalachian Utilities - Main Line construction - 125 Colvard Farm Road, Jefferson, NC 28640
- J&S Underground - Service Drops - 221 Guy Grouse Road, Traphill, NC 28685

NC Wireless utilizes the following subcontractors:

- Triangle Tower – Tower Construction and Antenna Installation
- Double Radius – Hardware VAR
- Waldrop Wireless Technicians - Tower Construction, Engineering and Antenna Installation

Gamewood Technology Group utilizes the following subcontractors:

- 360 Communications - Tower Climbing, Engineering, and Construction - 17375 US 70, Durant, OK 74701
- Piedmont Tower, Inc. - Tower Climbing, Engineering, and Construction - 115 E Eller Dr, Winston-Salem, NC 27107

** Further details about past projects and resumes of contractors can be provided upon request.*

3.5 FINANCIAL STATEMENT

Located within *(Attachments Section 7.4, Schedule 1)*

3.5.1 Certificate of Bankruptcy

Located within *(Attachments Section 7.4)*

3.6 VA CONFLICT OF INTEREST ACT

Based on our understanding, we do not believe anyone should be disqualified for conflict of interest under VA Code 2.2-3100 et seq.

3.7 CERTIFICATION OF GOOD STANDING

(certificate of good standing see attachments section)

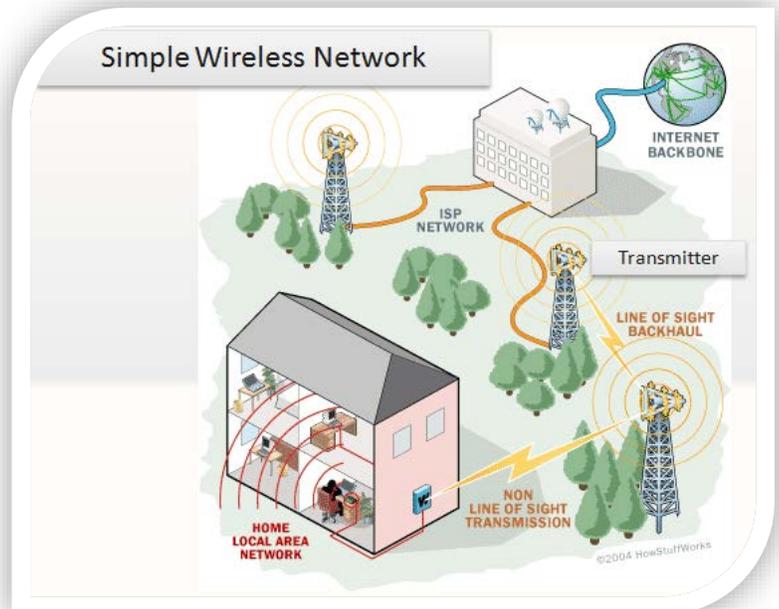
4 CONCEPTUAL DESIGN

4.1 DESCRIPTION OF PROPOSED SYSTEM

We propose a Fixed Wireless Network using either the 3.65GHz or 2.5GHz bands over LTE (pending availability of spectrum within our business case).

A central aggregation point for the 2-county region would be created whereby wireless and fiber backhaul can be aggregated and offload on to the Mid-Atlantic Broadband Communities Middle Mile network.

Tower sites (both new or existing) would be located strategically to serve the most number of homes/businesses in conjunction with input from stakeholders.



Wilkes TMC pledges \$1M over 3 years toward fiber infrastructure to assist with backhaul between primary tower sites where Microwave Backhaul may not be the best option.

4.1.1 Proposed Technologies

Below, the primary delivery technologies to be used on our Fixed Wireless Broadband network are broken down into Backhaul and Last Mile or (PtMP).

4.1.1.1 Backhaul

Remote sites will be connected back to a centralized location where Middle-Mile Fiber can be accessed to connect back to an IXP located in Virginia.

Fiber backhaul will be utilized where cost effective via existing fiber assets or new fiber builds via investment from Wilkes TMC.

Licensed Fixed Wireless will be utilized otherwise.

Redundancy – We propose building a ring (fiber and / or licensed wireless) that will provide redundancy between our primary tower sites.

4.1.1.2 PtMP Last Mile

Our proposal is an nLoS LTE solution using either the 3.65GHz or 2.5GHz bands. Both have licensing implications that will have to be coordinated.

LTE is a well-vetted and highly supported wireless standards-based protocol with a diverse ecosystem of UE (user equipment or CPE) and an established roadmap of software-upgradable improvements across the same hardware platform.

In areas with densities and LoS opportunities, we may overlay 5GHz technologies to sell higher capacity services.

4.1.2 Design Capacities

Summary by technology as planned included below:

- LTE Subscriber Unit: 40Mbps in highest modulation
- LoS Subscriber Unit: 100Mbps in highest modulation
- Fiber Backhaul: 10Gbps
- Wireless Backhaul – Gigabit: 1Gbps FDX
- LTE Access Points: 105 x 14 Mbps in 20MHz channel per carrier
- Full Tower: 4x 90deg. LTE Broadband Sectors
(LoS Technologies Layered on as needed)

- Upstream Middle Mile Fiber:

Upstream connections will be 10 Gbps, fiber-optic, Ethernet direct or WDM (wave division multiplexed for multiple 10 Gbps waves) primary and secondary for fault tolerance.

- Datacenter ISP:

Connections to peering points and datacenters will be 2 - (primary and secondary) 10 Gbps Ethernet connections with a committed information rate (CIR) built to suit the bandwidth needs of the customer base. These rates are easily upgraded within hours or days. The system will be built to support multiple 10 Gbps wavelengths (WDM), if needed.

4.1.3 Example of Equipment Locations

PtMP LTE Cabling Diagram *(see Attachments section)*

4.1.3.1 Towers and Tanks

Indoor Equipment – typically our indoor equipment takes up about 20U of space in a typical 2 or 4 post rack and around 3' x 6' of floor space including buffer area. *(see attachments: photo section 7.2 for examples)*

Outdoor Equipment – typically our outdoor equipment is comprised of the following:

- 4-8x Antennas and Base Stations (at 200' – 250' height with 8'-10' of vertical space)

- 1-4x Parabolic Backhaul Antennas (at minimum height to accomplish Line of Sight to remote antennas requiring 4-8' of vertical space)
- Applicable mounts to correctly mate up to the tower
- Necessary Power and Ethernet cabling per Base Station
- Grounding hardware to specification

4.1.3.2 Other Vertical Structures

Similar indoor requirements as in (Towers and Tanks) above for full blown tower sites. Some sites have less equipment and in that case can be mounted into pole attached NEMA Enclosures or on a standard Concrete Pad. (see Attachments section)

4.1.4 Proposed Network Map

Peering: Will Peer at an IXP located in VA

Interconnection and Peering

RiverStreet Networks has established interconnection agreements with the following companies and plans to partner with these providers to connect Dinwiddie and Amelia customers to the Internet:

<ul style="list-style-type: none"> • Mid-Atlantic Broadband Communities • Cogent • QTS • Pixel Factory 	<ul style="list-style-type: none"> • Uniti • Zayo • Citizens Telephone Company
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4.1.5 Predicted RF Coverage Map

The coverage maps below are conceptual in nature using the information we have available to us in the timeframe set forth by the grant submission schedule. If awarded, we will be able to invest in further engineering providing more detail.

Note: We are "aiming" to cover 95% of the locations, and although there are many unknowns, once the project is in progress, alterations in design and approach will be executed to hone in that aim to cover the 95% being requested.

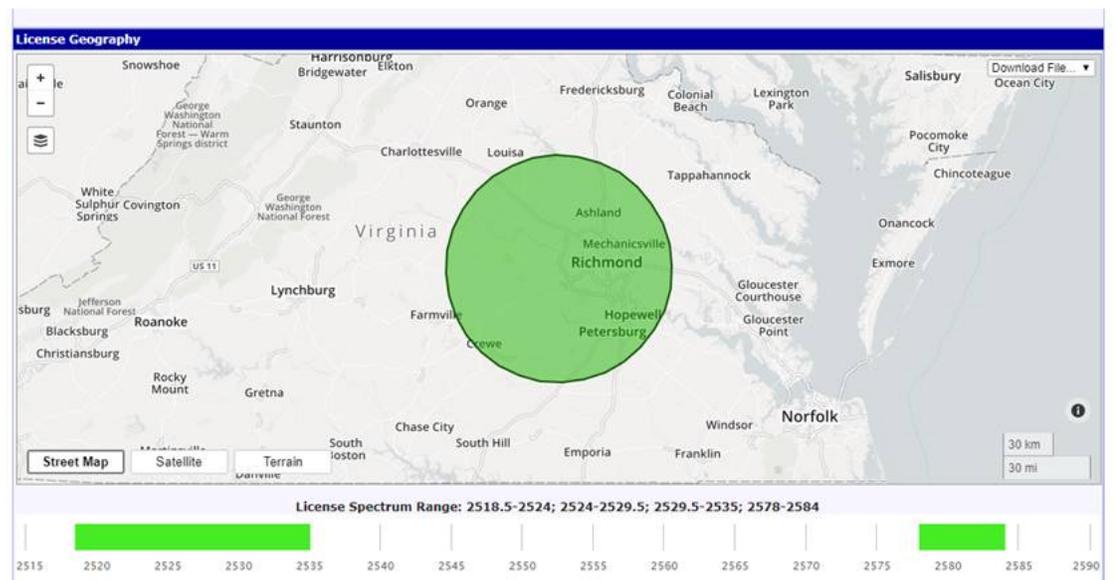
(Maps next page, additional in Attachments Section)

Wireless Coverage Assumptions

Assumptions consider terrain, FCC power/antenna limits, ground clutter, buildup, tree type, and density averages, tower sectors at 250’ AGL, subscriber endpoints up to 60’ AGL. To reliably obtain broadband speeds, we limit max PtMP distances to 7km.

4.1.5.1 2.5GHz LTE Licensed Option

We are aware Amelia County Public Schools owns about 20MHz of licensed spectrum, which could be used for licensed PtMP broadband deployment. We are open to investigate if it is feasible to utilize this license, which would provide coverage for all of Amelia and much of Dinwiddie County. If usable, our per-tower footprint in those areas would be much larger due to increased FCC power rules and better RF propagation. Consequently, this could reduce the number of total towers; however, overall cost likely would not change because it is a more expensive solution. (See FCC ULS Data below)



4.1.6 Equipment Warranties

Generally, networking and wireless hardware have 12-month warranties for manufacturer defects.

4.1.7 Acceptance Test Plan

General Speed Testing:

Hardwired Network Testing is to be conducted via multi stream TCP to the edge of our network (edge router) for speed and performance with supplemental testing done to a near (east-coast) off-site location via speedtest.net.

End Point Speed Testing:

At mutually agreed strategic locations located no further than 6-7 km LoS or 4km nLoS from the nearest access point, we can test speeds to determine proof of performance. Testing elevations will be no higher than 60' above ground level and conducted outside of peak service periods.

Testing is to be conducted via multi stream TCP to the edge of our network (edge router) for speed and performance with supplemental testing done to a near (east-coast) off-site location via speedtest.net.

Signal Strength RF Testing:

Once a tower or POP site is engineered, NCW will provide RF propagation maps by which we can test for expected signal levels with the following considered: FCC Limitations, Outside RF Interference, Terrain, Ground Clutter, Buildup, Trees, and Antenna Patterns/Gain. These would be Line of Sight tests ran against each sector installed at a tower or POP site up to 6-7km.

4.2 DESCRIPTION OF SERVICES

Broadband Internet and Voice Telephone where available in select areas.

Home, Small Office, and Business services will be available.

4.2.1 Standard Installation Example

Diagram located on right

Materials Included

- Up to 100ft of outdoor-rated, shielded CAT5e Cable
- LightLeap Wireless Equipment, standard antenna and PoE Injector (Power over Ethernet)
- Standard J-arm, Antenna Stand-off and/or Mast (5ft)
- Antenna and/or Ethernet Grounding to CPE vendor spec
- Fiber drops typically NOT utilized in Wireless Deployments

Labor Included

- Installation of Receiver on the roof, sidewall or structure attached to your home or demarcation point (cable runs between structures are non-standard)
- Ethernet entering your home via existing access hole or create new access via outside wall (special cable runs may be billed additional)
- Programming of a Single Router or Computer to access our network
- Show Proof of Connectivity and Performance (hard-wired)



Any non-standard installation labor or materials will be discussed with the account holder on-site by the installation contractor. These items are to be fully quoted and approved before work begins and to be paid directly to the installer.

4.3 DESCRIPTION OF PARTNERING AGREEMENT

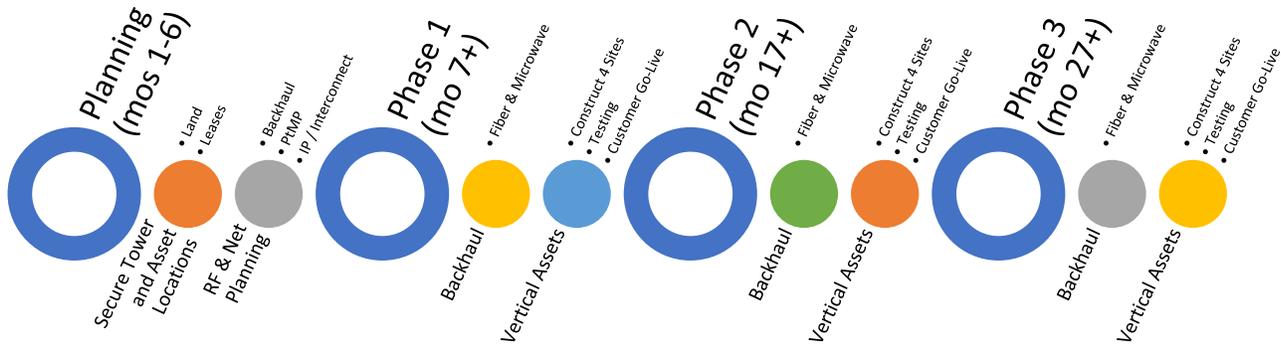
RiverStreet Networks plans to partner with Dinwiddie and Amelia Counties as follows:

1. Leveraging existing and new county-owned vertical assets and real estate to contain the equipment and facilities needed to deploy broadband.
2. RiverStreet may be able to provide infrastructure and connectivity between county offices, campus locations, fire and safety locations, educational locations, or anchor institutions.
3. RiverStreet Networks is committed to supporting the people and organizations that aim to make the communities we serve a strong place to live and work. In an effort to ensure the future is as strong as the past, RiverStreet Networks gives back to the communities it

serves. An example is through scholarship programs. Since the creation of this offering in 2002, the organization has awarded over \$250,000 to local high school seniors. We expect to extend this support to Dinwiddie and Amelia Counties.

4.4 TIMELINE AND PHASES

Summary: 3 year (36mos) Project Timeline



4.5 OWNERSHIP, LEGAL LIABILITY, AND OPERATION ASSUMPTIONS

Gamewood Technology Group and RiverStreet Communications of Virginia are two wholly-owned subsidiaries of Wilkes Telephone Membership Corporation, both operating as state-wide Competitive Local Exchange Carriers (CLEC) licensed in the state of Virginia. Wilkes Telephone Membership Corporation is an Independent Telephone Cooperative operating in the state of North Carolina. North Carolina Wireless is currently under a management agreement with Wilkes Telephone Membership Corporation and has agreed to a letter of intent for purchase by Wilkes Telephone Membership Corporation in July of this year. All entities will operate in conjunction to accomplish the project in Dinwiddie and Amelia Counties via the specified timeline.

Legal liability and obligation will reside with the parent company, Wilkes Telephone Membership Corporation, as it will be funding the \$1 Million cash infusion for the project. Gamewood provides the state license, and North Carolina Wireless will provide the engineering and construction obligation with assistance from RiverStreet Communications of Virginia. The network will be managed and maintained by RiverStreet Communications of Virginia and do business as RiverStreet Networks.

(See Legal Structure in Attachments Section)

5 COST ESTIMATES

5.1 DESIGN AND IMPLEMENTATION ESTIMATES

Site	Backhaul	Construction	Land & Lease	HW & Materials	Climbs	Eng. & Testing	Qty	Subtotal	
Dinwiddie									
Full Tower/Land	\$30,000	\$250,000	\$20,000	\$55,000	\$15,000	\$25,000	3	\$1,185,000	
Existing Tower	\$30,000		\$30,000	\$50,000	\$13,000	\$25,000	2	\$296,000	
Fiber Backbone		\$150,000		\$200,000		\$60,000	1	\$410,000	
Amelia									
Full Tower/Land	\$30,000	\$250,000	\$20,000	\$55,000	\$15,000	\$25,000	3	\$1,185,000	
Existing Tower	\$30,000		\$30,000	\$50,000	\$13,000	\$25,000	1	\$148,000	
Fiber Backbone		\$150,000		\$200,000		\$60,000	1	\$410,000	
Donated Towers	\$15,000	\$125,000.00	\$20,000	\$55,000	\$15,000	\$25,000	3	\$765,000	
Totals	\$315,000	\$2,175,000	\$270,000	\$1,045,000	\$174,000	\$420,000		\$4,399,000	
	* fiber 45k/mi								
			Totals	Totals				\$4,399,000	Total
			Easements	\$270,000				\$1,000,000	Contribution
			Materials	\$1,045,000				\$3,399,000	Grant
			Const/Inst	\$2,664,000					Area Totals
			Testing	\$420,000					
			Totals	\$4,399,000					

Summary

Wireless Backhaul:	\$315,000	Climbs:	\$174,000
Construction:	\$2,175,000	Engineering and Testing:	\$420,000
Hardware & Material:	\$1,045,000	Land & Lease:	\$270,000

5.2 RENT SCHEDULE FOR COUNTY TOWERS OR FACILITIES

We propose a simple and auditable revenue share model per facility.

Example: *Monthly 5% of revenues via each proposed site, up to \$50 per antenna/sector/AP with a \$200/mo. ceiling per Site (tower, building, so on). Adjusted every 6 months and invoiced/paid every 6 month cycle and would begin once a \$200/mo. combined minimum is reached.*

5.3 COST OF SERVICES OFFERED TO PUBLIC

- Minimum Contract Period: Monthly
 - No contract or term for Installations with standard build and engineering costs.
- Monthly Service Rates:
 - Residential: 25/3 @ \$35 per month
 - Small Office: 25/3 @ \$45 per month
 - Enterprise: 25/3 @ (to be quoted)
- Cost for CPE: Standard CPE Included
- Shipping Costs: None anticipated

- On-Site Service Installation Costs: None for Standard Installations
- Activation Fees: None for Standard Installations
- Cancellation Fees: None for Standard Installations

6 DEFINITIONS AND TERMS

AP - Access Point

BGP – Border gateway protocol, is a standardized exterior gateway protocol designed to exchange routing and reachability information among autonomous systems (AS) on the Internet. The protocol is often classified as a path vector protocol but is sometimes also classed as a distance-vector routing protocol.

CPE - Customer premise equipment

Drop – the true last-mile, often feet of limited count fiber build out from the handhold or splice closure to the customer demarcation point.

IXP – Internet Exchange Point or a datacenter where multiple networks have facilities for interconnection.

LoS – Line of Sight, terminology used for Wireless Connections where there are no obstructions and no Fresnel zone issues. This is required for high modulations to provide fastest levels of throughput and system efficiency.

Micro-Cell - a localized version of a *POP* that is often on a smaller vertical asset such as a utility pole, grain elevator or rooftop. Typically network equipment is mounted within a NEMA type enclosure attached to the structure.

Minimum Requirements for Repeater or Micro-Cell – in order to accomplish sustainability NCW recommends a minimum threshold of service revenues to justify installation of this type of way-point.

NCW - North Carolina Wireless, LLC. a corporate entity licensed to do business in the state of North Carolina.

nLoS – Near line of sight, terminology used for Wireless Connections where there the tower can't be seen by the eye, typically these are light obstructions such as leaves or trees. nLoS does not include situations where terrain or hills are directly in the way.

OSPF - Open Shortest Path First is a routing protocol for Internet Protocol (IP) networks. It uses a link state routing (LSR) algorithm and falls into the group of interior routing protocols, operating within a single autonomous system (AS). It is defined as **OSPF** Version 2 in RFC 2328 (1998) for IPv4.

POP - Point of presence, generally seen as a major aggregation point for PtMP services and is often a tower but also can be a building or any major vertical asset for co-location.

PPP – Public Private Partnership

PtMP - Point to Multi-point, typical scenario where many end-users connect to a single access point sharing time and resources on that hardware.

PtP - Point to point, typically used for backhauling or enterprise customers

Repeater - somewhat similar to a *micro-cell* however it is typically co-located at a customer's location (home or business) and the owner is registered as an affiliate receiving a monthly residual for end-users who are serviced via the repeater.

UE – User Equipment

7 ATTACHMENTS

7.1 RESUMES

President and CEO - Eric Cramer

Directs all activities of the company, cooperative network either directly or through subordinate managers. Interprets and implements board directed policies. Plans, directs and oversees all lines of business. Determines objectives, establishes operating procedures, and ensures the success of the organization within guidelines and authority established by the board. Ensures that all operations comply with applicable federal, state and local regulations. Represents organization with regulatory agencies, legislative bodies and industry associations. Evaluates new business opportunities and recommends new services to board. Oversees budget process and all long-term investments. Prepares financial forecasts, acquisition analysis and merger planning. Analyzes financials and presents to the board of directors. Oversees the strategic planning process by serving as the organizational expert in regulatory and financial management aligned with all business segments.

Jody Call - Chief Technology Officer

Responsible for the planning, implementation and administration of the company's broadband and IT Infrastructure, security and systems. Develops strategies for delivering leading edge services to a wide range of subscribers. Develops short- and long-range business plans. Develops budgets, authorizes expenditures and oversees projects to ensure business plan objectives are met. Researches new products, services and technologies. Evaluates market demand and makes recommendations to top management. Works with vendors to implement appropriate systems. Oversees the service, maintenance and upgrades to the network infrastructure. Directs activities of network operations installation/repair and support through subordinate managers. Directs telco plant operations, including managing the installation, replacement, removal and maintenance of transmission equipment and switching facilities. May direct activities of purchasing and network operations. Coordinates organization's safety program by ensuring implementation of safety policies and procedures. Completes and files accident reports. Conducts safety training and inspections.

Greg Coltrain - Vice President of Business Development

Gathers competitive information on products and services and makes recommendations for new business development activities. Maintains knowledge of industry changes and developments and directs efforts to identify, research and capitalize on business trends. Informs and educates community, state and industry leaders about the company's services, achievements and plans. Attracts media coverage of telco activities. Networks with state utility commission members and other industry leaders. Acts as a liaison between the telco and state and community groups to advance and promote local economic development projects. Manages project design, development and economic analysis and project lifecycle with the executive team. Seeks out potential partnerships, joint ventures, new product lines, and other business opportunities. Plans, directs and coordinates activities for existing or newly assigned regional projects to ensure that project goals are accomplished within the prescribed time frame. This would include but is not limited to developing supporting documentation, the management of all stakeholder facing activities and new program support as required. Manages changes in project scope and goals, and revises project plans. Manages budgets and timelines.

Chief Financial Officer - Kimberley Johnson

Duties include managing all accounting, financial and regulatory operations. Facilitates budget process and oversees audit functions. Develops financial policies and processes. Manages all accounting and financial operations. Specific responsibilities typically include receipts and disbursements, accounting and financial record keeping and reporting, short-term investments and management of cash flow, and tax return preparation. May negotiate terms of purchase and arrange for any necessary financing of major equipment and supplies. May research, recommend and administer long-term investments. Analyzes financial reports. Contributes to strategic planning process by serving as an organizational expert in financial management. May file all company compliance reports. Directs all human resources activities for the corporation, including recruiting and hiring, developing personnel policies and procedures, administering the collective bargaining agreement, maintaining personnel records, and ensuring compliance with federal, state, and local employment laws. Serves in an advisory role to members of the management team, providing professional advice on a wide range of human resource management related topics and activities.

Amanda Perry - Vice President of Sales and Marketing

Drafts, develops and executes marketing plans and strategies. Defines service plans for market segments. Conducts continuing appraisal of selling prices and market penetration. Maintains company's competitive position. Directs all marketing and sales activities through subordinate managers. Develops marketing and sales plans and oversees implementation of marketing and sales strategies and objectives. Develops sales forecasts and quotas. Directs the activities of the commercial department. Promotes and oversees sales of CPE and other equipment. Establishes and implements the company's public relations policy. Ensures that sales staff is informed of proper service and equipment charges. Forecasts system and subscriber growth. Advises operations and engineering departments on service area needs. May establish and administer credit policies for new subscribers. May ensure the accuracy of billing data and the security of customer accounts. May establish collection procedures and direct collection activities.

Jody Souther - Vice President of Network Engineering

Directs activities of outside plant and engineering, through subordinate managers. Develops short and long-range business plans. Develops budgets, authorizes expenditures and oversees projects to ensure business plan objectives are met. Directs telco plant operations, including managing the construction, replacement, removal and maintenance of aerial and buried cable. Ensures that telco personnel understand RUS and Industry specifications, safety procedures and preventive maintenance operations, including bonding and grounding of digital switching equipment installations. Develops and maintains records to allow reference, analysis and monitoring of all plant components and equipment. Recommends major improvements to plant and equipment. Initiates or recommends purchases of equipment, tools and supplies.

Bill Shillito – NC Wireless, President

Experience of 16 years in WISP Industry. Retired Major from US Army, combat veteran. MBA at Harvard Business School and MBA Public Administration. Lead team member for enterprise sales, community planning and VIP customer relationships. Quotes NRE and MRC on non-standard accounts. Primary AR/AP. Special Projects and Project Management. Escalated non-standard Sales opportunities and backs up all departments as needed.

Joshua Strickland – NC Wireless, Partner/Co-Founder

Experience of 16 years in WISP Industry, 23 years in ISP and Service Provider Industry. BS of Computer Science from Lenoir Rhyne University. Grants, PPP Relationships (state and local) and new market development. Establishes vision and analysis of business case for new network expansions and mapping. Special projects usually with an emphasis on R&D, process optimization and training. Billing lead, backup AR. Escalated Technical issues and backs up all departments as needed.

7.2 TOWER AND POP PHOTOS

Ground Level HW Examples

A. Pole Mounted NEMA Cabinet in Avery Co NC



B. 2-Post Tower Rack in Person Co NC



C. Secured Rack Enclosure in Air Shaft





Backhaul (dual) via Water Tank

Base Station and Antenna HW Examples

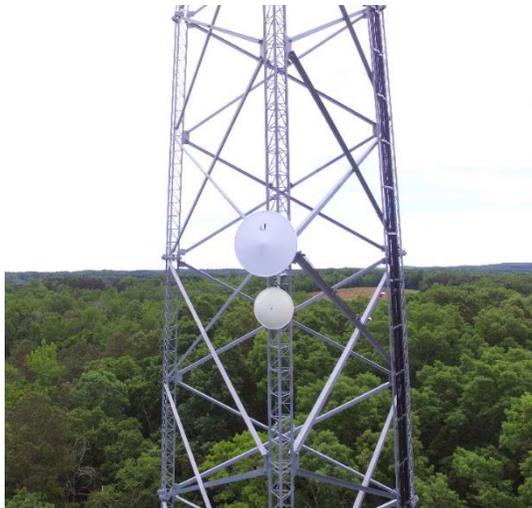
Tower Deployment in Person Co NC



LTE Sector and Base Station Display



Redundant Backhaul Antennas (parabolic)



7.3 CPE AND ENDPOINT PHOTOS



7.4 FINANCIAL DOCUMENTS (CONFIDENTIAL)

**NORTH CAROLINA
WILKES COUNTY**

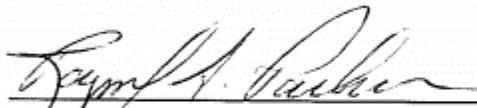
CERTIFICATION

Raymond A. Parker, being first duly sworn, deposes and says:

I am an attorney licensed to practice law in the State of North Carolina. I currently serve as General Counsel of Wilkes Telephone Membership Corporation, and all of its subsidiary companies both in the State of North Carolina and in the State of Virginia.

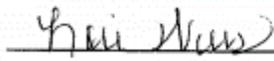
I do hereby certify that neither Wilkes Telephone Membership Corporation, nor any of its subsidiary companies, have filed any petition in bankruptcy within the last ten years.

This 4th day of June, 2019.

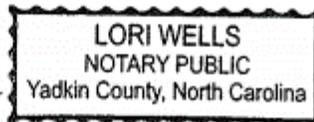


Raymond A. Parker, Attorney
131 Colony Lane
Elkin, NC 28621
NC State Bar #6321

Sworn to and subscribed before me, this 4th day of June, 2019.

 _____, Notary Public
Signature

Lori Wells
Printed Name



My commission expires: April 03, 2024

7.5 CERTIFICATES



State Corporation Commission

CERTIFICATE OF GOOD STANDING

I Certify the Following from the Records of the Commission:

That RiverStreet Communications of Virginia, Inc. is duly incorporated under the law of the Commonwealth of Virginia;

That the date of its incorporation is October 2, 2015;

That the period of its duration is perpetual; and

That the corporation is in existence and in good standing in the Commonwealth of Virginia as of the date set forth below.

Nothing more is hereby certified.



*Signed and Sealed at Richmond on this Date:
June 6, 2019*

Joel H. Peck

Joel H. Peck, Clerk of the Commission

CISECOM
Document Control Number: 1906065416

Commonwealth OF Virginia



State Corporation Commission

CERTIFICATE OF GOOD STANDING

I Certify the Following from the Records of the Commission:

That Gamewood Technology Group, Inc. is duly incorporated under the law of the Commonwealth of Virginia;

That the date of its incorporation is November 5, 2010;

That the period of its duration is perpetual; and

That the corporation is in existence and in good standing in the Commonwealth of Virginia as of the date set forth below.

Nothing more is hereby certified.



*Signed and Sealed at Richmond on this Date:
June 6, 2019*

Joel H. Peck
Joel H. Peck, Clerk of the Commission

CISECOM
Document Control Number: 1906065409



NORTH CAROLINA Department of the Secretary of State

CERTIFICATE OF EXISTENCE (Limited Liability Company)

I, Elaine F. Marshall, Secretary of State of the State of North Carolina, do hereby certify that

NORTH CAROLINA WIRELESS, LLC

is a limited liability company duly formed, and existing under the laws of the State of North Carolina, having been formed on 30th day of May, 2003

I FURTHER certify that, as of the date of this certificate, (i) the said limited liability company is not dissolved under the terms of its articles of organization, (ii) the said limited liability company's articles of organization are not suspended for failure to comply with the Revenue Act of the State of North Carolina, (iii) that said limited liability company is not administratively dissolved for failure to comply with the provisions of the North Carolina Limited Liability Company Act, (iv) that this office has not filed any decree of judicial dissolution, articles of dissolution, articles of merger, or articles of conversion for said limited liability company.



Scan to verify online.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal at the City of Raleigh, this 6th day of June, 2019.

Elaine F. Marshall

Secretary of State

Certification# 105134529-1 Reference# 15442568- Page: 1 of 1
Verify this certificate online at <http://www.sosnc.gov/verification>



NORTH CAROLINA Department of the Secretary of State

CERTIFICATE OF EXISTENCE

I, **ELAINE F. MARSHALL**, Secretary of State of the State of North Carolina, do hereby certify that

WILKES TELEPHONE MEMBERSHIP CORPORATION

is a corporation duly created, organized and existing under the laws of the State of North Carolina, having been incorporated pursuant to the provisions of Chapter 117, Public Laws of North Carolina, by Certificate of Incorporation dated the 24th day of August, 1951.

I **FURTHER** certify that the said Wilkes Telephone Membership Corporation is an active North Carolina corporation, and that the said corporation has not filed a Certificate of Dissolution and continues to be in existence in this State as of the date of this certificate.



Scan to verify online.

Certification# 105027625-1 Reference# 15405352- Page: 1 of 1
Verify this certificate online at <http://www.sosnc.gov/verification>

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal at the City of Raleigh, this 16th day of May, 2019.

Secretary of State

COMMONWEALTH of VIRGINIA
Department of Professional and Occupational Regulation
9960 Mayland Drive, Suite 400, Richmond, VA 23233
Telephone: (804) 367-8500

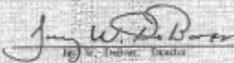
EXPIRES ON
06-30-2020

NUMBER
2705107938

BOARD FOR CONTRACTORS
CLASS A CONTRACTOR
"CLASSIFICATIONS" ESC FAS



GAMEWOOD TECHNOLOGY GROUP INC
165 DEER RUN ROAD
DANVILLE, VA 24540

James W. DeBoer, Director

Status can be verified at <https://www.dpor.virginia.gov>

(SEE REVERSE SIDE FOR PRIVILEGES AND INSTRUCTIONS) DPOR-LIC (02/2017)

**NORTH CAROLINA
CERTIFICATION
WILKES COUNTY**

Raymond A. Parker, being first duly sworn, deposes and says:

I am an attorney licensed to practice law in the State of North Carolina. I currently serve as General Counsel of Wilkes Telephone Membership Corporation, and all of its subsidiary companies both in the State of North Carolina and in the State of Virginia.

I do hereby certify that Wilkes Telephone Membership Corporation and all of its subsidiary companies are in "Good Standing" and that none of these companies are currently debarred or suspended from business by any Federal, State or local government entity.

This 7th day of June, 2019.



Raymond A. Parker, Attorney
131 Colony Lane
Elkin, NC 28621
NC State Bar #6321

Sworn to and subscribed before me, this 7th day of June, 2019.

Lori Wells _____, Notary Public
Signature

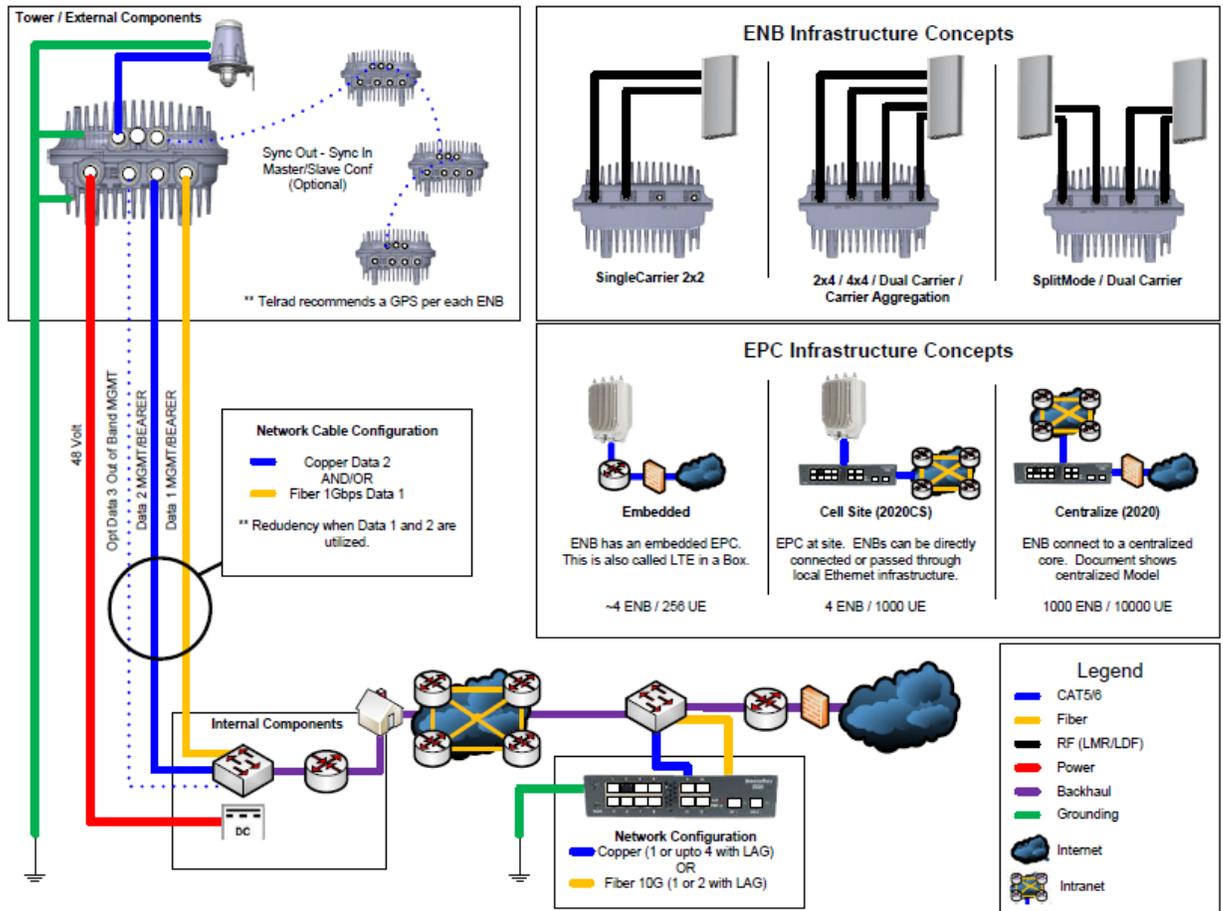
Lori Wells _____
Printed Name

My commission expires: April 03, 2024

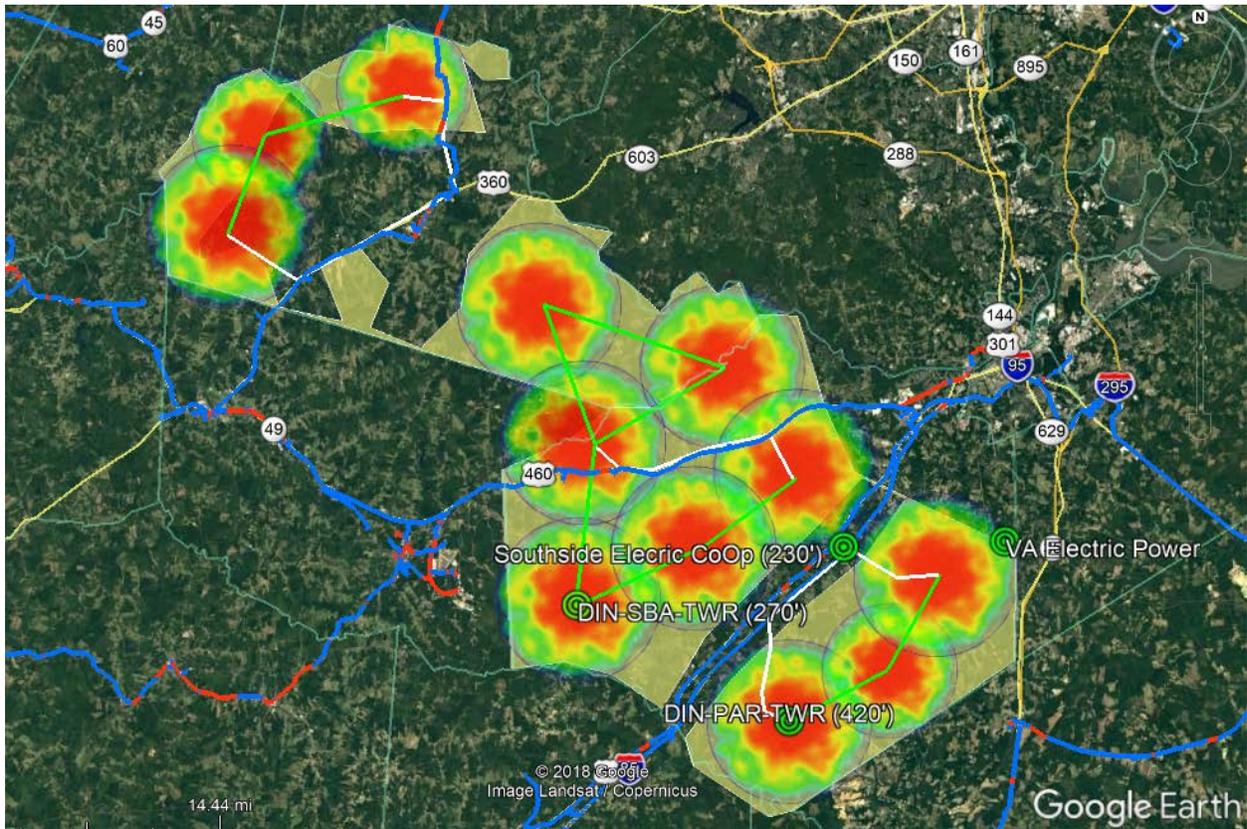


7.6 DIAGRAMS

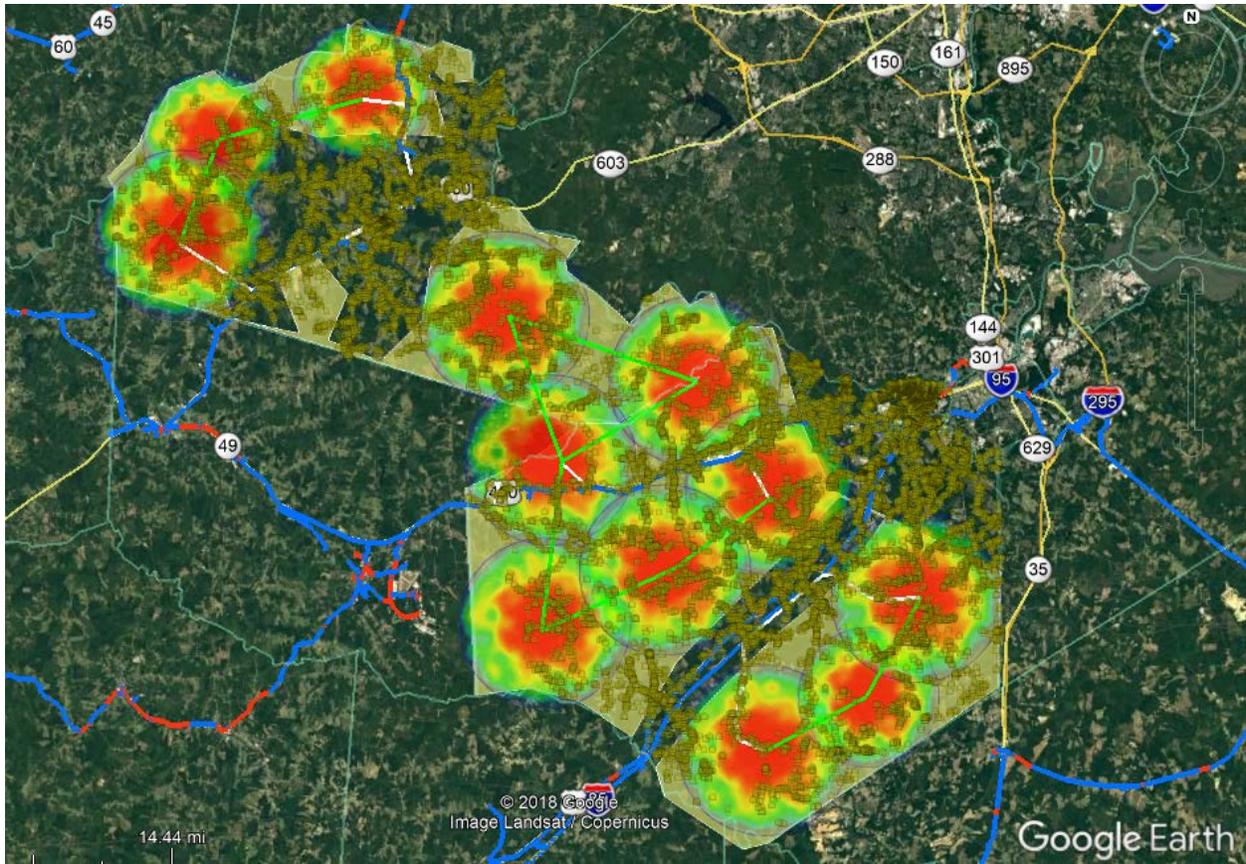
PtMP LTE Cabling Diagram



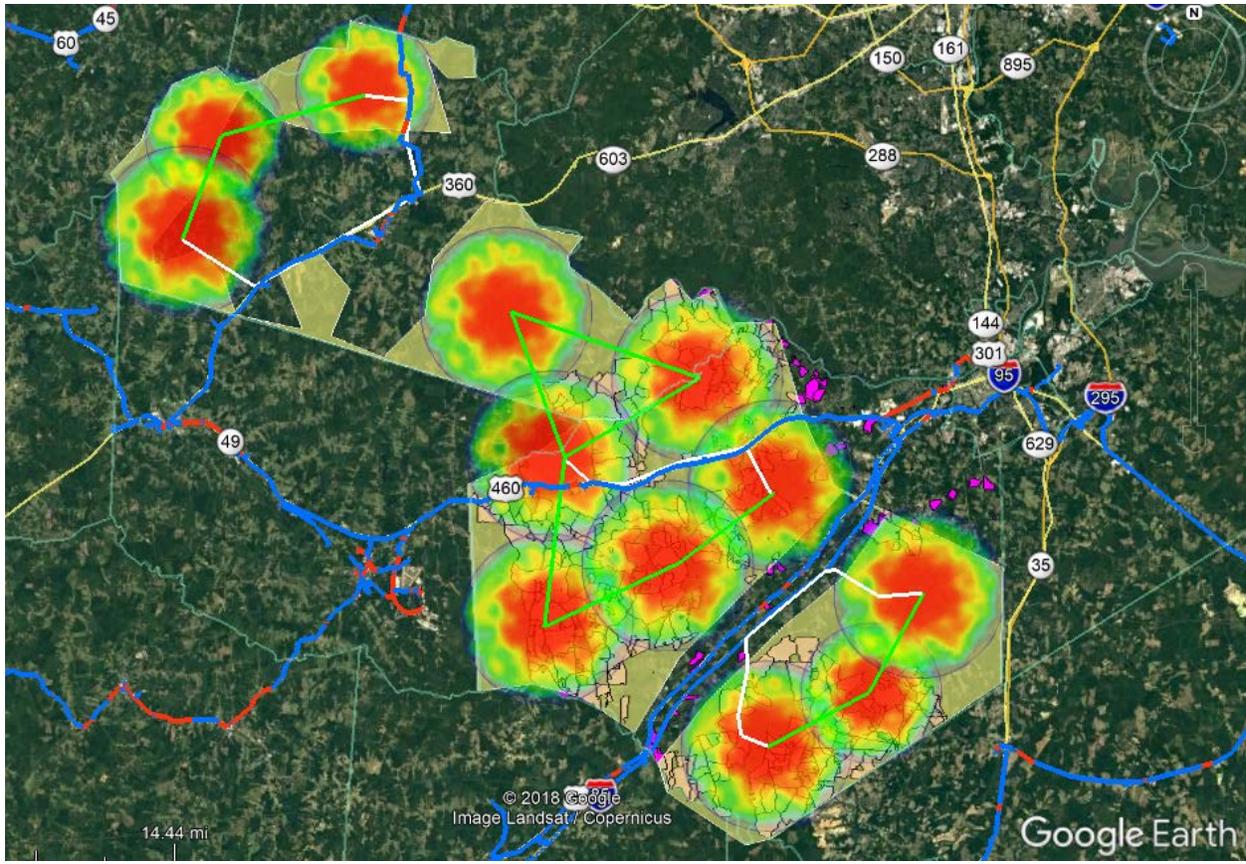
7.7 ADDITIONAL MAPPING



2-County Coverage with Notable Tower Overlay



2-County Area with Structure GIS Overlay



2-County Area with CAF-II Non-awarded Census Blocks

RiverStreet Footprint (Confidential)

Confidential

7.8 LEGAL STRUCTURE (CONFIDENTIAL)

7.9 SIGNATURE OF AUTHORIZED REPRESENTATIVE

RiverStreet Communications of Virginia, Inc.

a Virginia Corporation

1400 River Street

Wilkesboro, NC 28697

336-973-3103

 Jody R. Call

Jody R. Call: Chief Technology Officer, Authorized Representative

Date: 06-10-2019

Gamewood Technology Group, Inc.,

a Virginia Corporation (address same as above)

 Jody R. Call

Jody R. Call: Chief Technology Officer, Authorized Representative

Date: 06-10-2019

Gamewood Telecom, Inc.,

a Virginia Corporation (address same as above)

 Jody R. Call

Jody R. Call: Chief Technology Officer, Authorized Representative

Date: 06-10-2019